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ABSTRACT

This study investigated how fathers and mothers modulated the specificity of their tutoring strategies as a function of their children's moment-to-moment behavior during a problem-solving activity. A total of 63 seven-year-old children and their parents participated in the study. Mothers and fathers worked separately with their children on a microcomputer activity, and these activities were recorded and coded to ascertain children's help-seeking and parents' tutoring behaviors. The results indicated that mothers and fathers adjusted their tutoring strategies according to a contingent-shift rule--parents offered more specific support when the children failed and offered less specific support when the children succeeded in their attempts to solve the task. Mothers' and fathers' modulation of their level of tutoring were not different and were not influenced by the sex of the children. Neither boys nor girls were more likely to seek help from their same-sex parent than from the opposite sex parent. (Contains 26 references.) (MDM)

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MATERNAL AND PATERNAL TUTORING STRATEGIES WITH THEIR SCHOOL-AGE CHILDREN DURING A PROBLEM-SOLVING ACTIVITY

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ABSTRACT

Many problem-solving strategies used by children are thought to originate in parent-child interactions. Few studies have compared mothers' and fathers' tutoring strategies in dyadic interactions with their children. This study investigated how fathers and mothers modulated the specificity of their tutoring strategies as a function of their children's moment-to-moment behavior during a problem-solving activity, as well as children's help-seeking behaviors. Mothers and fathers worked separately with their children on a microcomputer activity; the order of the dyadic interactions was counterbalanced. A total of 63 7-year-old children (30 boys and 33 girls) and their parents were observed. Levels of tutoring were identified and were used to define parents' modulation of their tutoring. Results showed that mothers and fathers adjusted their tutoring strategies according to a contingent-shift rule (Wood, 1980); parents offered more specific support when the children failed and offered less specific support when the children succeeded in their attempts to solve the task. Manovas with the sex of children as a between subject variable, the sex of parents as a within subject variable, were calculated on the number of contingent-shift rule behaviors by the parents, and on the number of help-seeking behaviors by the children. Results indicated that mothers' and fathers' modulation of their level of tutoring were not different and were not influenced by the sex of the children. Boys and girls were not more likely to seek help from their same-sex parent. Parental tutoring of children and children's help-seeking behaviors observed in this study are discussed with regard to parental scaffolding of children's learning and with regard to differential socialization practices of parents often reported in the literature.

INTRODUCTION

Many problem-solving strategies used by children are thought to originate in parent-child interactions (e.g. Freund, 1990; Gauvain & Rogoff, 1989; Wertsch, 1984). In that dyadic interaction, parents have been observed to adjust their teaching strategies according to the child's ability (e.g. Rogoff et al., 1984; Wood & Middleton, 1975). Wood and Middleton (1975) more specifically observed mothers' ability to give more support to their child following a failure and to give less support to their child after a success. This contingent-shift rule is an interesting operationalization of the concept of scaffolding (e.g. Rogoff, 1990; Wood et al., 1976)

Children of parents more likely to use the contingency-rule have been observed to be more successful when solving a task by themselves during a posttest (Wood et al., 1978). Parents were more likely to use the contingency-shift rule when the task was difficult (Pratt et al., 1992), or less likely to use it with children showing disruptive behaviors (Westerman, 1990). Pratt et al. (1988) did not report differences between fathers and mothers in the frequency of use of the contingent-shift rule, suggesting that both parents were similarly adjusting their behavior according to the contingency-rule.

The absence of differences between mothers and fathers is inconsistent with the literature on the differential socialization of boys and girls by their parents (e.g. Block, 1983; Maccoby, 1992; Maccoby & Jacklin, 1974; Snow et al., 1983) though a recent meta-analysis (Lytton & Romney, 1991) reported limited significant differences in that respect. In a learning context some studies have shown that mothers encouraged more the child's effort whereas the fathers were more likely to lead the interaction and get directly involved in the solution of the task (e.g. Osofsky & O'Connel, 1972). Other studies did not report such differences (e.g. Frankel & Rollins, 1983).

With regard to help-seeking behaviors by the children, studies (mainly using questionnaires) have shown that children were more likely to seek instrumental help from their fathers and affective support from their mothers (e.g. Barnett et al.,1989; Dino et al., 1984), or

were more likely to seek help from their same-sex parent (Barnett et al. 1989; Russel & Russell, 1987).

Most studies of parent-child interactions have observed mother-child interaction. Few studies have compared fathers' and mothers' ability to modulate their tutoring strategies as a function of their child's moment-to-moment behavior during a problem-solving activity. Few studies have compared fathers' and mothers' ability to use a contingent-shift rule, or children's help-seeking behaviors during a dyadic interaction.

RESEARCH QUESTIONS

Will fathers and mothers modulate differently their tutoring strategies as a function of their child's successes and failures in solving a task?

Will boys and girls differ with regard to their help-seeking behaviors during an interaction with their mother or their father?

METHOD

SUBJECTS

Grade one children (6 to 7 years old), 30 boys and 33 girls, and their parents participated in this observational study.

PROCEDURE

Families were invited to participate in a study of children's learning abilities. As part of the experimental procedure, families were told that each parent would learn how to use LOGO (Papert, 1981), a software used to draw figures, in order to teach the child how to reproduce specific drawings. Basic commands, and the step-by-step procedure to draw a house (first

parent), or a butterfly (second parent) were taught to each parent (15 minutes). The order of parents was counter balanced. Meanwhile the child was administered a different experimental task in an adjacent room. After the introduction to LOGO, parent and child were reunited and were told that they had 15 minutes to draw either the house or the butterfly and that the child might have to draw a similar object alone at the end of the visit. Children were told to refer to their mother or father for help. Each dyadic interaction was videotaped for further coding of the interaction.

Measures of cognitive ability were also administered to the parents (Block Design and Similarities subtests from the WAIS-R) and the children (PPVT-R and TONI-2).

OBSERVATIONAL DATA

A coding system for the dyadic interaction comprised of 72 codes was developed and tested for its validity and reliability (Normandeau & Couture, 1994). The verbatim transcript of each interaction was used to code the interaction. Interjudge reliability (number of agreements/ number of agreements + number of disagreements + omissions + additions) on 25% of the interactions varied from 70% to 85%, with a mean agreement of 78%. For the purpose of the present series of analysis, codes pertaining to children's help-seeking behaviors, and parents' tutoring behavior occuring before or after children's successes and failures while executing the task, were selected. The total frequency of each type of parental tutoring behavior and the total frequency of children's help-seeking behavior were calculated.

1- Children's successes and failures while trying to reproduce thedrawing served as anchor points to select parents' tutoring behavior.

2- Parents' tutoring

A. Parents' *incentives for planning and evaluation* (ex.: "What should we do first?", "Is this large enough?").

B. Parents' *verbalization about planning and evaluation* (ex.: "We still have the roof to draw.", "If we draw a line of 100, it will be too long.").

C. Parents' *concrete and direct explanations* about how to execute a command (ex.: "Write, Circle space 50.").

D. Parents' *simplification or demonstration* of a command (ex.: "You need to put a space between the letters and the numbers.", "The "r" is right by the "e".").

3- Childrens' help-seeking behaviors or direct requests for help (ex.: "Which letter? I forgot!", "Why do we have to turn in that direction?", "Do I write "square"?").

RESULTS

Will fathers and mothers modulate differently their tutoring strategies as a function of their child's successes and failures in solving a task?

Two (gender of child) X 2 (gender of parent) Manovas were performed on the frequency of use of the four tutoring strategies with gender of child as a between-subject variable, gender of parent as a within-subject variable, and the parents' level of education as a covariable. Results showed that children's gender did not influence the tutoring strategies used by parents (Pillais = 0.004, F (4,57) = .06, n.s.), and that fathers and mothers were not different regarding their use of these tutoring strategies (Pillais = 0.08, F (4,57) = 1.23, n.s.). Moreover, there was no interaction effect between children's and parents' gender (Pillais = 0.006, F (4,57) = 0.09, n.s.). Parents' education level was related to the following tutoring strategies: "Incentives for

planning and evaluation" (t (4,57) = 5.26, p <0.01), and "Verbalizations about planning and evaluation", (t (4,57) = 3.89, p <0.01).

Insert Table 1 about here

The frequency of parents' use of the contingent-shift rule was calculated. Parents were using the contingent-shift rule: 1) when a tutoring strategy following a success by the child was a more general tutoring strategy than the one preceding the child's success (for ex.: strategy C – success – strategy A), or 2) when a tutoring strategy following a failure by the child was a more specific tutoring strategy than the one preceding the child's failure (for ex.: strategy A – failure – strategy C). A 2 (gender of child) X 2 (gender of parent) Manova was performed on the frequency of use of the contingent-shift rule by the parents in failure or success situations, with the gender of child as a between-subject variable and the gender of parent as a within-subject variable. Results did not show any effect of the gender of the child (F (1,44) = 0.04, n.s.), no effect of the gender of the parent (F (1,44) = 0.44, n.s.), and no interaction effect between these two variables (F (1, 44) = 0.05, n.s.). However parents were more likely to apply the contingent shift-rule in success than in failure situations (F (1,44) = 189.38, p <0.01).

Insert Table 2 about here

Will boys and girls differ with regard to their help-seeking behaviors during an interaction with their mother or their father?

A 2 (gender of child) X 2 (gender of parent) Manova on the total frequency of help-seeking behaviors by children with gender of child as a between-subject factor and gender of

parent as a within-subject factor was calculated. Results indicated no gender effect for children (F (1,61) = 1.98, n.s.), for parents (F (1,61) = 1.29, n.s.), and no interaction effect between these two variables (F (1, 61) = 0.08, n.s.).

Insert Table 3 about here

CONCLUSION

No differences between mothers and fathers were observed in their tutoring strategies or in their use of the contingent-shift rule. This is consistent with Pratt et al.'s (1988) results. In the present study parents were explicitly asked to teach their child how to use specific commands to complete a drawing on the microcomputer. Not only were parent-child interactions observed in a learning context rather than in a play context, but the task to be completed was new and presented some difficulties for both the parents and the child. In many observational studies, the task to be completed by the parent and the child is new or difficult for the child only. Previous studies have shown that mothers' familiarity with the task influences their tutoring strategies; those who are more familiar with the task are more likely to explain the strategies to their child and more likely to encourage the child's participation (Normandeau & Arsenault, 1994; Rogoff, 1990). Moreover, studies have reported less differences between fathers and mothers in controlled situations (Belsky, 1980) similar to the present laboratory context. In the present study, the learning context, the lack of parents' familiarity with the task, the difficulty of the task and the laboratory context may explain the absence of differences between parents.

Parents used more often the contingency-rule in success than in failure situations. These results are consistent with Westerman's (1990) observations. The novelty of the task for the parents themselves may explain that, in success situations, they were more likely to adjust

their tutoring strategies to the child's performance than in failure situations. In fact, in failure situations, they were probably more preoccupied by finding solutions than by adjusting their tutoring strategies to the level of their child's performance.

Neither boys or girls were more likely to seek help from their mother of their father. Help-seeking behaviors coded in the present study were instrumental in nature. Previous studies had reported that children were more likely to seek instrumental support from their father. It seems that children did not attribute or recognize more competence in the task to either parents.

Though parental practices may deffer with regard to children's socialization, the present results suggest that in a learning context new to both parents and new to the children, mothers and fathers are similar with regard to the scaffolding (the use of the contingent-shift rule) of then child's problem-solving activity.

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Table 1. Frequency of tutoring strategies by mothers and fathers in interaction with their daugher or son.

	Incentives		Planning and Evaluation		Explanations		Simplification	
	$\bar{X}$	s.d.	$\bar{X}$	s.d.	$\bar{X}$	s.d.	$\bar{X}$	s.d.
Daughters								
Fathers	9.24	11.02	13.21	7.41	27.03	10.72	87.27	37.15
Mothers	8.27	9.88	14.78	7.14	29.63	13.30	92.45	33.84
Sons								
Fathers	8.56	8.99	12.46	6.43	26.90	9.62	87.13	32.82
Mothers	8.60	10.95	14.76	6.77	26.63	11.72	95.30	37.68

Table 2. Frequency of contingency-rule behaviors by mothers and fathers in interaction with their son or daughter in success and failure situations.

	Success		Failure	
	$\bar{X}$	s.d.	$\bar{X}$	s.d.
Daughters				
Mothers	6.95	4.23	1.50	1.73
Fathers	7.36	5.14	1.09	1.23
Sons				
Mothers	7.08.	4.76	1.37	1.13
Fathers	6.70	4.25	1.67	1.43

Table 3. Frequency of help-seeking behaviors by boys and girls in interaction with their mother and father.

	$\bar{X}$	s.d.
Girls (n=33)		
Fathers	11.60	7.85
Mothers	11.21	8.68
Boys (n=30)		
Fathers	14.33	9.22
Mothers	14.20	9.79